



## SEQLIST.TXT

## SEQUENCE LISTING

<110> Smithkline Beecham Biologicals s.a.

Bollen, Alex  
Bruck, Claudine  
Jacobs, Paul  
Massaer, Marc

<120> Recombinant Allergen with Reduced Enzymatic Activity

<130> B45122

<140> US 09/554,860

<141> 2000-05-19

<150> PCT/EP98/07521

<151> 1998-11-16

<150> GB9724531.0

<151> 1997-11-19

<160> 30

<170> FastSEQ for windows version 4.0

<210> 1

<211> 320

<212> PRT

<213> Artificial Sequence

<220>

<223> Recombinant mutant Der p1 including pre-protein -  
Cys 132 to Ala 132

<400> 1

Met	Lys	Ile	Val	Leu	Ala	Ile	Ala	Ser	Leu	Leu	Ala	Leu	Ser	Ala	Val
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Tyr	Ala	Arg	Pro	Ser	Ser	Ile	Lys	Thr	Phe	Glu	Glu	Tyr	Lys	Lys	Ala
			20					25					30		
Phe	Asn	Lys	Ser	Tyr	Ala	Thr	Phe	Glu	Asp	Glu	Glu	Ala	Ala	Arg	Lys
		35					40					45			
Asn	Phe	Leu	Glu	Ser	Val	Lys	Tyr	Val	Gln	Ser	Asn	Gly	Gly	Ala	Ile
	50					55					60				
Asn	His	Leu	Ser	Asp	Leu	Ser	Leu	Asp	Glu	Phe	Lys	Asn	Arg	Phe	Leu
65					70				75					80	
Met	Ser	Ala	Glu	Ala	Phe	Glu	His	Leu	Lys	Thr	Gln	Phe	Asp	Leu	Asn
				85					90				95		
Ala	Glu	Thr	Asn	Ala	Cys	Ser	Ile	Asn	Gly	Asn	Ala	Pro	Ala	Glu	Ile
			100					105					110		
Asp	Leu	Arg	Gln	Met	Arg	Thr	Val	Thr	Pro	Ile	Arg	Met	Gln	Gly	Gly
		115					120					125			
Cys	Gly	Ser	Ala	Trp	Ala	Phe	Ser	Gly	Val	Ala	Ala	Thr	Glu	Ser	Ala
	130					135					140				
Tyr	Leu	Ala	Tyr	Arg	Asn	Gln	Ser	Leu	Asp	Leu	Ala	Glu	Gln	Glu	Leu
145					150				155					160	
Val	Asp	Cys	Ala	Ser	Gln	His	Gly	Cys	His	Gly	Asp	Thr	Ile	Pro	Arg
			165					170						175	
Gly	Ile	Glu	Tyr	Ile	Gln	His	Asn	Gly	Val	Val	Gln	Glu	Ser	Tyr	Tyr
		180					185					190			
Arg	Tyr	Val	Ala	Arg	Glu	Gln	Ser	Cys	Arg	Arg	Pro	Asn	Ala	Gln	Arg
		195					200					205			
Phe	Gly	Ile	Ser	Asn	Tyr	Cys	Gln	Ile	Tyr	Pro	Pro	Asn	Val	Asn	Lys
	210					215					220				
Ile	Arg	Glu	Ala	Leu	Ala	Gln	Thr	His	Ser	Ala	Ile	Ala	Val	Ile	Ile
225					230					235				240	

SEQLIST.TXT

Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile  
 245 250 255  
 Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile  
 260 265 270  
 Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn  
 275 280 285  
 Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala  
 290 295 300  
 Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu  
 305 310 315 320

<210> 2  
 <211> 272  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Recombinant mutant Der p1 including pre-protein

<400> 2  
 Met Lys Ile Val Leu Ala Ile Ala Ser Leu Leu Ala Leu Ser Ala Val  
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 Tyr Ala Arg Pro Ser Ser Ile Lys Thr Phe Glu Glu Tyr Lys Lys Ala  
 20 25 30  
 Phe Asn Lys Ser Tyr Ala Thr Phe Glu Asp Glu Glu Ala Ala Arg Lys  
 35 40 45  
 Asn Phe Leu Glu Ser Val Lys Tyr Val Gln Ser Asn Gly Gly Ala Ile  
 50 55 60  
 Asn His Leu Ser Asp Leu Ser Leu Asp Glu Phe Lys Asn Arg Phe Leu  
 65 70 75 80  
 Met Ser Ala Glu Ala Phe Glu His Leu Lys Thr Gln Phe Asp Leu Asn  
 85 90 95  
 Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu Arg Gln  
 100 105 110  
 Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly Ser Cys  
 115 120 125  
 Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu Ala Tyr  
 130 135 140  
 Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp Cys Ala  
 145 150 155 160  
 Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile Glu Tyr  
 165 170 175  
 Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr Val Ala  
 180 185 190  
 Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly Ile Ser  
 195 200 205  
 Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg Glu Ala  
 210 215 220  
 Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile Lys Asp  
 225 230 235 240  
 Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile Ile Gln Arg Asp  
 245 250 255  
 Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile Val Gly Tyr Ser  
 260 265 270

<210> 3  
 <211> 320  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Recombinant mutant Der p1 including pre-protein -  
 His 268 to Ala 268

<400> 3

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Met Lys Ile Val Leu Ala Ile Ala Ser Leu Leu Ala Leu Ser Ala Val
 1      5      10      15
Tyr Ala Arg Pro Ser Ser Ile Lys Thr Phe Glu Glu Tyr Lys Lys Ala
 20      25      30
Phe Asn Lys Ser Tyr Ala Thr Phe Glu Asp Glu Glu Ala Arg Lys
 35      40      45
Asn Phe Leu Glu Ser Val Lys Tyr Val Gln Ser Asn Gly Gly Ala Ile
 50      55      60
Asn His Leu Ser Asp Leu Ser Leu Asp Glu Phe Lys Asn Arg Phe Leu
 65      70      75      80
Met Ser Ala Glu Ala Phe Glu His Leu Lys Thr Gln Phe Asp Leu Asn
 85      90      95
Ala Glu Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile
100      105      110
Asp Leu Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly
115      120      125
Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala
130      135      140
Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu
145      150      155      160
Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg
165      170      175
Gly Ile Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr
180      185      190
Arg Tyr Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg
195      200      205
Phe Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys
210      215      220
Ile Arg Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile
225      230      235      240
Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile
245      250      255
Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr Ala Ala Val Asn Ile
260      265      270
Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn
275      280      285
Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala
290      295      300
Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
305      310      315      320

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<210> 4  
 <211> 339  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Recombinant mutant Der p1 encoded by pNIV4842

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<400> 4
Met Leu Leu Val Asn Gln Ser His Gln Gly Phe Asn Lys Glu His Thr
 1      5      10      15
Ser Lys Met Val Ser Ala Ile Val Leu Tyr Val Leu Leu Ala Ala Ala
 20      25      30
Ala His Ser Ala Phe Ala Ala Asp Pro Arg Pro Ser Ser Ile Lys Thr
 35      40      45
Phe Glu Glu Tyr Lys Lys Ala Phe Asn Lys Ser Tyr Ala Thr Phe Glu
 50      55      60
Asp Glu Glu Ala Ala Arg Lys Asn Phe Leu Glu Ser Val Lys Tyr Val
 65      70      75      80
Gln Ser Asn Gly Gly Ala Ile Asn His Leu Ser Asp Leu Ser Leu Asp
 85      90      95
Glu Phe Lys Asn Arg Phe Leu Met Ser Ala Glu Ala Phe Glu His Leu
100      105      110
Lys Thr Gln Phe Asp Leu Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro
115      120      125

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SEQLIST.TXT

Ala Glu Ile Asp Leu Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met  
 130 135 140  
 Gln Gly Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr  
 145 150 155 160  
 Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu  
 165 170 175  
 Gln Glu Leu Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr  
 180 185 190  
 Ile Pro Arg Gly Ile Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu  
 195 200 205  
 Ser Tyr Tyr Arg Tyr Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn  
 210 215 220  
 Ala Gln Arg Phe Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn  
 225 230 235 240  
 Ala Asn Lys Ile Arg Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala  
 245 250 255  
 Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly  
 260 265 270  
 Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala  
 275 280 285  
 Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile  
 290 295 300  
 Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr  
 305 310 315 320  
 Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val  
 325 330 335  
 Val Ile Leu

<210> 5  
 <211> 343  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Recombinant mutant Der p1 encoded by pNIV4843

<400> 5  
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 20 25 30  
 Ala His Ser Ala Phe Ala Ala Asp Pro Arg Pro Ser Ser Ile Lys Thr  
 35 40 45  
 Phe Glu Glu Tyr Lys Lys Ala Phe Asn Lys Ser Tyr Ala Thr Phe Glu  
 50 55 60  
 Asp Glu Glu Ala Ala Arg Lys Asn Phe Leu Glu Ser Val Lys Tyr Val  
 65 70 75 80  
 Gln Ser Asn Gly Gly Ala Ile Asn His Leu Ser Asp Leu Ser Leu Asp  
 85 90 95  
 Glu Phe Lys Asn Arg Phe Leu Met Ser Ala Glu Ala Phe Glu His Leu  
 100 105 110  
 Lys Thr Gln Phe Asp Leu Asn Ala Glu Thr Asn Ala Cys Ser Ile Asn  
 115 120 125  
 Gly Asn Ala Pro Ala Glu Ile Asp Leu Arg Gln Met Arg Thr Val Thr  
 130 135 140  
 Pro Ile Arg Met Gln Gly Gly Cys Gly Ser Ala Trp Ala Phe Ser Gly  
 145 150 155 160  
 Val Ala Ala Thr Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Gln Ser Leu  
 165 170 175  
 Asp Leu Ala Glu Gln Glu Leu Val Asp Cys Ala Ser Gln His Gly Cys  
 180 185 190  
 His Gly Asp Thr Ile Pro Arg Gly Ile Glu Tyr Ile Gln His Asn Gly  
 195 200 205  
 Val Val Gln Glu Ser Tyr Tyr Arg Tyr Val Ala Arg Glu Gln Ser Cys  
 210 215 220

SEQLIST.TXT

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Arg Arg Pro Asn Ala Gln Arg Phe Gly Ile Ser Asn Tyr Cys Gln Ile
225      230      235      240
Tyr Pro Pro Asn Ala Asn Lys Ile Arg Glu Ala Leu Ala Gln Thr His
      245      250      255
Ser Ala Ile Ala Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg
      260      265      270
His Tyr Asp Gly Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro
      275      280      285
Asn Tyr His Ala Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val
      290      295      300
Asp Tyr Trp Ile Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn
305      310      315      320
Gly Tyr Gly Tyr Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu
      325      330      335
Tyr Pro Tyr Val Val Ile Leu
      340

```

<210> 6  
 <211> 963  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Nucleotide sequence encoding recombinant mutant  
 Der p1 - Cys 132 to Ala 132

```

<400> 6
atgaaaattg ttttgcccat cgcctcattg ttggcattga gcgctgttta tgctcgtcca 60
tcatcgatca aaacttttga agaatacaaa aaagccttca acaaaagtta tgctaccttc 120
gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaat 180
ggaggtgcc aaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240
atgagtgcag aagcttttga acacctcaaa actcaattcg atttgaatgc tgaaactaac 300
gcctgcagta tcaatggaaa tgctccagct gaaatcgatt tgcgacaaat gcgaactgtc 360
actcccatc gtatgcaagg aggctgtggt tcagcttggg ctttctcttg tgttgccgca 420
actgaatcag cttatttggc ttaccgtaat caatcattgg atcttgctga acaagaatta 480
gtcgattgtg cttcccaaca cggttgtcat ggtgatacca ttccacgtgg tattgaatac 540
atccaacata atggtgtcgt ccaagaaagc tactatcgat acgttgcacg agaacaatca 600
tgccgacgac caaatgcaca acgtttcggg atctcaaaact attgccaaat ttaccacca 660
aatgtaaaac aaattcgtga agctttggct caaacccaca gcgctattgc cgtcattatt 720
ggcatcaaac atttagacgc attccgtcat tatgatggcc gaacaatcat tcaacgcgat 780
aatggttacc aaccaaacta tcacgctgtc aacattgttg gttacagtaa cgcacaagg 840
gtcgattatt ggatcgtacg aaacagttgg gataccaatt ggggtgataa tggttacgg 900
tattttgctg ccaacatcga tttgatgatg attgaagaat atccatatgt tgtcattctc 960
taa

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<210> 7  
 <211> 951  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Nucleotide sequence encoding recombinant mutant  
 Der p1 - NAET deletion

```

<400> 7
atgaaaattg ttttgcccat cgcctcattg ttggcattga gcgctgttta tgctcgtcca 60
tcatcgatca aaacttttga agaatacaaa aaagccttca acaaaagtta tgctaccttc 120
gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaat 180
ggaggtgcc aaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240
atgagtgcag aagcttttga acacctcaaa actcaattcg atttgaacgc ctgcagtatc 300
aatggaaatg ctccagctga aatcgatttg cgacaaatgc gaactgtcac tcccattcgt 360
atgcaaggag gctgtggttc atgttgggct ttctctggtg ttgccgcaac tgaatcagct 420
tatttgctt accgtaatca atcattggat cttgctgaac aagaattagt cgatttgtct 480
tcccaacacg gttgtcatgg tgataccatt ccacgtggtg ttgaatacat ccaacataat 540
ggtgtcgtcc aagaaagcta ctatcgatac gttgcacgag aacaatcatg ccgacgacca 600
aatgcacaac gtttcggtat ctcaaactat tgccaaattt acccaccaaa tgtaaacaaa 660

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attcgtgaag ctttggctca aacccacagc gctattgccc tcattattgg catcaaagat 720
ttagacgcat tccgtcatta tgatggccga acaatcattc aacgcgataa tggttaccaa 780
ccaaactatc acgctgtcaa cattgttggg tacagtaacg cacaagggtg cgattattgg 840
atcgtacgaa acagtgggga taccaattgg ggtgataatg gttacgggta ttttgctgcc 900
aacatcgatt tgatgatgat tgaagaatat ccatatgttg tcattctcta a 951
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<210> 8

<211> 963

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence encoding recombinant mutant  
Der p1 - His 268 to Ala 268

<400> 8

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atgaaaattg ttttggccat cgcctcattg ttggcattga gcgctgttta tgctcgtcca 60
tcatcgatca aaacttttga agaatacaaa aaagccttca acaaaagtta tgctaccttc 120
gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaatt 180
ggagggtgcc tcaaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240
atgagtgcag aagcttttga acacctcaaa actcaattcg atttgaatgc tgaaactaac 300
gcctgcagta tcaatggaaa tgctccagct gaaatcgatt tgcgacaaat gcgaactgtc 360
actcccattc gtatgcaagg aggctgtggg tcatgttggg ctttctctgg tgttgccgca 420
actgaatcag cttatttggc ttaccgtaat caatcattgg atcttgctga acaagaatta 480
gtcgattgtg cttcccaaca cggttgatcat ggtgatacca ttccacgtgg tattgaatac 540
atccaacata atggtgtcgt ccaagaaagc tactatcgat acggtgcacg agaacaatca 600
tgccgacgac caaatgcaca acgtttcggg atctcaaact attgccaaat ttaccaccca 660
aatgtaaaaca aaattcgtga agctttggct caaaccaca gcgctattgc cgtcattatt 720
ggcatcaaag atttagacgc attccgcat tatgatggcc gaacaatcat tcaacgcgat 780
aatggttacc aaccaaacta tgctgctgtc aacattgttg gttacagtaa cgcacaagg 840
gtcgattatt ggatcgtagc aaacagttgg gataccaatt ggggtgataa tgggttacgg 900
tattttgctg ccaacatcga tttgatgatg attgaagaat atccatatgt tgtcattctc 960
taa 963
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<210> 9

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> XhoI-PstI oligonucleotide

<400> 9

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tcgagaaaag agaggctgaa gctactaacg cctgca 36
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<210> 10

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> XhoI-PstI oligonucleotide

<400> 10

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ggcgtagta gcttcagcct ctcttttc 28
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<210> 11

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<223> BamHI-PstI oligonucleotide

<400> 11

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gatccaaacg atgagatttc cttcaatttt tactgcagtt ttattcgcag catcctccgc 60
attagctgct ccaactaacg cctgca 86
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<210> 12  
 <211> 78  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> BamHI-PstI oligonucleotide

<400> 12  
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 aggaaatctc atcgtttg 78

<210> 13  
 <211> 74  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide allowing the NAET deletion

<400> 13  
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 tttgaacgcc tgca 74

<210> 14  
 <211> 66  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide allowing the NAET deletion

<400> 14  
 ggcgttcaaa tcgaattgag ttttgaggtg ttcaaaagct tctgcatcat caaaaatcgg 60  
 tttttg 66

<210> 15  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> RT-PCR primer

<400> 15  
 catgaaaatt gttttggcca tcgcc 25

<210> 16  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> RT-PCR primer

<400> 16  
 cggtttttga attcatccaa cgac 24

<210> 17  
 <211> 113  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> AseI-TfiI synthetic fragment

SEQLIST.TXT

<400> 17  
 taatggaaat gctccagctg aaatcgattt gcgacaaatg cgaactgtca ctcccattcg 60  
 tatgcaagga ggctgtgggt cagcttgggc tttctctggt gttgccgcaa ctg 113

<210> 18  
 <211> 114  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> AseI-TfiI synthetic fragment

<400> 18  
 attcagttgc ggcaacacca gagaaagccc aagctgaacc acagcctcct tgcatacgaa 60  
 tgggagtgc agttcgcat tgcgcaa tgcgcaa tgcgcaa tgcgcaa tgcgcaa 114

<210> 19  
 <211> 75  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide allowing the NAET deletion

<400> 19  
 aattcaaaaa ccgatttttg atgagtgcag aagcttttga acacctcaaa actcaattcg 60  
 atttgaacgc ctgca 75

<210> 20  
 <211> 67  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide allowing the NAET deletion

<400> 20  
 ggcgttcaaa tcgaattgag ttttgagggtg ttcaaaagct tctgcactca tcaaaaatcg 60  
 gtttttg 67

<210> 21  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> RT-PCR primer

<400> 21  
 catgaaaatt gttttggcca tcgcc 25

<210> 22  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> RT-PCR primer

<400> 22  
 cggtttttga attcatccaa cgac 24

<210> 23  
 <211> 78  
 <212> DNA  
 <213> Artificial Sequence



SEQLIST.TXT

<220>

<223> HindIII-PstI oligonucleotide

<400> 23

agccttaccat gaaaattggt ttggccatcg cctcattggt ggcattgagc gctgtttatg 60  
ctcgtactaa cgcctgca 78

<210> 24

<211> 70

<212> DNA

<213> Artificial Sequence

<220>

<223> HindIII-PstI oligonucleotide

<400> 24

ggcgttagta cgagcataaa cagcgcctcaa tgccaacaat gaggcgatgg ccaaaacaat 60  
tttcatgta 70

<210> 25

<211> 172

<212> DNA

<213> Artificial Sequence

<220>

<223> BamHI-EcoRI 172 bp synthetic fragment

<400> 25

gatccccggc cgtcatcgat caaaactttt gaagaataca aaaaagcctt caacaaaagt 60  
tatgtacct tcgaagatga agaagctgcc cgtaaaaact ttttggaatc agtaaaatat 120  
gttcaatcaa atggaggtgc catcaaccat ttgtccgatt tgctcgttga tg 172

<210> 26

<211> 172

<212> DNA

<213> Artificial Sequence

<220>

<223> BamHI-EcoRI 172 bp synthetic fragment  
complementary sequence

<400> 26

aattcatcca acgacaaatc ggacaaatgg ttgatggcac ctccatttga ttgaacatat 60  
tttactgatt ccaaaaagtt ttacgggca gcttcttcat cttcgaaggt agcataactt 120  
ttgttgaagg cttttttgta ttcttcaaaa gttttgatcg atgacggccg gg 172

<210> 27

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> 98023 oligonucleotide

<400> 27

gtacccttaa gatgcta 17

<210> 28

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> 98024 oligonucleotide

<400> 28

ctagtagcat cttaagg 17

SEQLIST.TXT

<210> 29  
 <211> 75  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> 98136 oligonucleotide

<400> 29  
 aattcaaaaa ccgatttttg atgagtgcag aagcttttga acacctcaaa actcaattcg 60  
 atttgaacgc ctgca 75

<210> 30  
 <211> 67  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> 98137 oligonucleotide

<400> 30  
 ggcgttcaaa tcgaattgag ttttgagggtg ttcaaaagct tctgcactca tcaaaaatcg 60  
 gtttttg 67

<210> 31  
 <211> 4  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223>Propeptide cleavage site

<400> 1  
 Asn Ala Glu Thr  
 1